

## **REMARKS**

Favorable reconsideration of this application and the Office Action of May 13, 2005 are respectfully requested in view of the following remarks.

Claims 1 to 36 remain under consideration in this application.

The indication of the allowability of claims 13 and 30 and that they would be allowed if written in independent form including the limitation of the base claims and any intervening claims is noted with appreciation. However, it is not considered necessary to rewrite these claims in independent form since the independent claims from which they are dependent are considered to be allowable for the reasons set forth hereafter.

It is noted with appreciation that all the previous 35 U.S.C. 103 rejections of the claims and the double patenting rejection of claims have been withdrawn.

As stated in Applicant's previous response, the present invention relates to **non-photosensitive polyimide precursor compositions that are soluble in gamma-butyrolactone and aqueous tetramethyl ammonium hydroxide and which have certain specified adhesion promoters (of formulae I through VI) that enable the compositions not to be degraded as to stability of the composition.**

For the present invention, the polymer and the polymer composition have the following characteristics:

1. The polyimide precursor polymer must be soluble in gamma butyrolactone with/without co solvent (such compositions are not obvious; see comparative examples 1-6).

2. The polymer must be alkali soluble to sufficient degree (large dissolution rate ranges; such polymers are not obvious that all will be alkali soluble; see Table 1 and Comparative Example 1).
3. The polymer must be photoresist solvent resistant (again this feature is not obvious. See Table 1).
4. The adhesion promoter must be stable in the solution (likewise this feature is not obvious; see Table 3).

The present Inventors have discovered that only certain adhesion promoters enable one to obtain such essentially non-degradable, stable non-photosensitive polyimide precursor compositions that are soluble in *gamma*-butyrolactone and aqueous tetramethyl ammonium hydroxide and possess improved adhesion without degradation and instability, possessing the four above listed characteristics, whereas other adhesion promoters are not able to provide such stable compositions and in fact lead to degradation (gelling) of such non-photosensitive polyimide precursor compositions that are soluble in *gamma*-butyrolactone and aqueous tetramethyl ammonium hydroxide. This unexpected discovery is illustrated in Applicants' specification, particularly in the inventive and the comparative examples in paragraphs [0069] and [0070] and particularly in the data in Tables 1 and 3 at pages 36, 39 and 40. This data clearly demonstrates the unobviousness of the present invention, and thereby the erroneousness of the USPTO's prior art obviousness rejection of the claims over the cited prior art for the reasons set forth hereinafter.

The new 35 U.S.C. 103 rejection of claims 1-12, 14-29 and 31-36 under 35 U.S.C. 103 as being unpatentable over Yamashiki et al (US 6,455,208 B1) in view of Ono et al. (US2005/0058780 A1) is respectfully traversed. It is respectfully submitted that the rejection is improper since the Ono et al. publication is not a valid reference, and even if it were a valid reference a proper reading and understanding these reference disclosures demonstrates that their disclosures do not teach or render obvious the claimed invention.

The cited Ono et al. document is a published application that was published on March 17, 2005. Thus, the reference date for this document is its publication date of March 17, 2005 for 35 U.S.C. 102 (a) and 102 (b) purposes (and therefore for Section 103 purposes). The only time that the filing date of this US Patent application publication can be used as a reference is under 35 U.S.C. 102 (e) and thus not under Section 103. See MPEP Section 906.03, fifth paragraph. Therefore, the Ono et al. publication with an effective date of March 17, 2005 for Section 103 purposes is not a reference against the claims of the present application having a filing date of December 10, 2003 and an earlier priority date of December 12, 2002. Therefore, for this reason the rejection of the claims over Yamashika et al. in view of Ono et al under 35 U.S.C. 103 is legally erroneous and its withdrawal is required.

It is agreed that Yamashiki et al. discloses polyamic acids within the scope of the claims. As previously stated in Applicant's prior Response, Applicants' do not contend that their polyamic acids are new, rather that the stable compositions thereof in *gamma*-butyrolactone, with the specific adhesion promoters of formulae I through VI, are new and unobvious. Yamashiki et al. does not disclose compositions having the adhesion promoters required by the present invention and claims of this application. This fact the PTO correctly recognizes. That is logical because, based on the state of the art, those skilled in the relevant art were unaware of adhesion promoters that would provide stable compositions. Although the reference does not disclose the use of adhesion promoters, the PTO, on its own, tries to cure this deficiency of the Yamashiki et al. patent disclosure by suggests that use of the adhesion promoters of Applicants' claims in Yamashiki et al's composition would be obvious and suggest using one from the disclosure in Ono et al. As stated above the disclosure in Ono et al is not a reference against the claims. Moreover, even if it was a reference, the rejection is erroneous since this obviousness position of the PTO Action is clearly hindsight based solely upon Applicants' invention. Nothing in Yamashika et al. suggests that any adhesion promoter could or should be used, nor any adhesion promoter that could be used provide a stable composition, nor is there anything to lead that person to select a specific adhesion promoter from Ono et al. Thus, this hindsight reconstruction of the art is erroneous and requires the rejection to be withdrawn.

Moreover, one skilled in the art is not taught by the disclosure in Ono et al. what adhesion promoters, if any at all, would be suitable for inclusion in the compositions of Yamashika et al. Applicant's specification demonstrates that some of the adhesion promoters of Ono et al. do not work in the compositions of Applicant's present invention—see Comparative Examples 8 and 1 in Table 3 (Such data need not be presented in a separate Declaration or Affidavit since it is already part of the specification which is under the Declaration of the Inventors filed with the application). Thus, the disclosure in Ono et al. clearly does not teach one skilled in the art how to arrive at the presently claimed invention, (i.e., which adhesion promoters would be acceptable and which one would not be acceptable and workable in Applicant's compositions) and the rejection should be withdrawn for this additional reason.

It is further to be noted and considered by the PTO that the compositions of Yamashiki et al. do not require complete solubility in the organic solvent (present invention criteria #1- see page 2 of this Response), although it is preferred (column 14 line 66-column 15 line 2). The final composition in Yamashiki et al. has numerous other additives, some of which are not soluble, so that **the composition is applied as a paste**. In contrast, it is critical that the compositions of the present invention be completely soluble in the solvent so that it can be filtered and particle free coatings can be obtained. **Comparative Examples 3-6 of the present application all fall generally into the description of Yamashiki et al. (all of the monomers employed for those examples are also specifically mentioned).** All of these comparative examples failed the solubility test for GBL and thus are not useful for the present invention. Thus, it is not apparent or obvious which of the compositions of Yamashiki et al. would work in the present invention, or with what adhesion promoters.

It is also to be noted and considered by the PTO that the numerous insoluble additives added to the composition to make it a paste, because of their solvent insolubility, provide a substantial amount of solvent resistance to the film when the photoresist is coated on top for the patterning step in Yamashiki et al. Thus, certain compositions of Yamashiki et al. would work in that application but not in the application of the present

invention because they lack the required solvent resistance without the additives. Some Yamashiki et al's compositions do not meet criteria #3 (see page 3 of this Response) of the present invention.

Thus, even if Ono et al were a valid reference (which it is not) these additional considerations further establish the unobviousness of the claims of this application over the disclosure in Yamashiki et al. taken with Ono et al. and the erroneousness of the rejection of claims 1-12, 14-29 and 31-36 over these two citations, and, therefore, withdrawal of this rejection is respectfully requested.

The rejection of claims 1-12 and 14-17 under 35 U.S.C. 103 as being unpatentable over Ono et al (US 2005/0058780 A1) is likewise respectfully traversed. Ono et al is not a reference under Section 103 for the reasons stated herein before. Therefore, this rejection is legally erroneous and its withdrawal is required.

It is respectfully submitted that the foregoing is a full and complete response to the Office Action and that all the claims are allowable for at least the reasons indicated. An early indication of their allowability by issuance of a Notice of Allowance is earnestly solicited.

Respectfully submitted,

By: 

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Date: July 25, 2005